

CLAIMS

1. A method comprising the step of:
 - a) generating a hedge signal to avoid adaptation to at least one
5 characteristic of an adaptive control system and/or a plant controlled by the adaptive control system.
2. A method as claimed in claim 1 further comprising the steps of:
 - b) modifying a commanded state signal with the hedge signal; and
 - c) generating a reference model state signal based on the commanded
10 state signal modified with the hedge signal in the step (b).
3. A method as claimed in claim 2 further comprising the step of:
 - d) generating a tracking error signal based on the reference model state signal and a plant state signal; and
 - e) generating an adaptive control signal to adapt control response of
15 the adaptive control system.
4. A method as claimed in claim 1 wherein the hedge signal is generated in the step (a) based on a difference between a first signal derived from a plant model not having the characteristic, and a second signal derived from a plant model having the characteristic.
- 20 5. A method as claimed in claim 4 wherein the first signal is generated based on an input control signal and a plant state signal in addition to the plant model not having the characteristic, and the second signal is generated further based on a command control signal and a plant state signal in addition to the plant model having the characteristic.

6. A method as claimed in claim 5 wherein the input control signal is generated based on at least one of the commanded state signal, reference model state signal, a plant state signal, and an adaptive control signal.
7. A method as claimed in claim 6 wherein the command control signal is generated based on the input control signal modified by a control allocation and a control characteristic imposed by the controller.
8. A method as claimed in claim 4 where in the second signal is generated based on an actuator state signal.
9. A method as claimed in claim 5 further comprising the step of:
- 10 b) generating a display based on the input control signal, an operator generating the command control signal based on the display.
10. A method as claimed in claim 1 wherein the plant is an aircraft and/or spacecraft.
11. A method as claimed in claim 1 wherein the plant is an automobile.
- 15 12. A method as claimed in claim 1 wherein the plan is an unmanned vehicle.
13. In an adaptive control system for controlling a plant, a hedge unit coupled to receive at least one control signal and a plant state signal, the hedge unit generating a hedge signal based on the control signal, the plant state signal, and a hedge model including a first model having a characteristic to which the adaptive control system is not to adapt, and a second model not having the characteristic to which the adaptive control system is not to adapt, the hedge signal used in the adaptive control system to remove the characteristic from a signal supplied to an adaptation law unit of the adaptive control
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system so that the adaptive control system does not adapt to the characteristic in controlling the plant.

14. An adaptive control system as claimed in claim 13 wherein the characteristic is a time delay between generation of the commanded state signal by the controller at a time, and receipt by the controller of the plant state signal resulting from the commanded state signal generated at the time.

15. An adaptive control system as claimed in claim 13 wherein the characteristic is a time delay between generation of a state by the plant and sensing of the state of the plant by the sensor to generate the plant state signal.

16. An adaptive control system as claimed in claim 13 wherein the characteristic pertains to a control limit of the actuator used to control the plant.

17. An adaptive control system as claimed in claim 13 wherein the control limit pertains to actuator end points.

18. An adaptive control system as claimed in claim 13 wherein the control limit pertains to actuator dynamics.

19. An adaptive control system as claimed in claim 13 wherein the control limit pertains to a rate limit of the actuator.

20. An adaptive control system as claimed in claim 13 wherein the control limit pertains to quantization effects associated with the actuator.

21. An adaptive control system as claimed in claim 13 wherein the plant is an aircraft and/or spacecraft.

22. An adaptive control system as claimed in claim 13 wherein the plant is an automobile.

23. An adaptive control system as claimed in claim 13 wherein the plant is an unmanned vehicle positioned remotely from an operator.